



SGCG gene

sarcoglycan gamma

Normal Function

The SGCG gene provides instructions for making the gamma component (subunit) of a group of proteins called the sarcoglycan protein complex. The sarcoglycan protein complex is located in the membrane surrounding muscle cells. It helps maintain the structure of muscle tissue by attaching (binding) to and stabilizing the dystrophin complex, which is made up of proteins called dystrophins and dystroglycans. The large dystrophin complex strengthens muscle fibers and protects them from injury as muscles tense (contract) and relax. It acts as an anchor, connecting each muscle cell's structural framework (cytoskeleton) with the lattice of proteins and other molecules outside the cell (extracellular matrix).

Health Conditions Related to Genetic Changes

limb-girdle muscular dystrophy

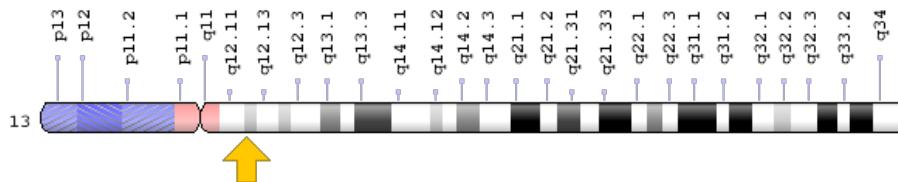
Approximately 40 mutations in the SGCG gene have been identified in people with limb-girdle muscular dystrophy type 2C. Limb-girdle muscular dystrophy is a group of related disorders characterized by muscle weakness and wasting, particularly in the shoulders, hips, and limbs. Forms of limb-girdle muscular dystrophy caused by gene mutations that affect the sarcoglycan complex are called sarcoglycanopathies.

SGCG gene mutations may prevent the sarcoglycan complex from forming or from binding to and stabilizing the dystrophin complex. Problems with these complexes reduce the strength and resilience of muscle fibers and result in the signs and symptoms of limb-girdle muscular dystrophy.

Chromosomal Location

Cytogenetic Location: 13q12.12, which is the long (q) arm of chromosome 13 at position 12.12

Molecular Location: base pairs 23,160,308 to 23,325,165 on chromosome 13 (Homo sapiens Annotation Release 108, GRCh38.p7) (NCBI)



Credit: Genome Decoration Page/NCBI

Other Names for This Gene

- 35 kDa dystrophin-associated glycoprotein
- 35DAG
- 35kD dystrophin-associated glycoprotein
- A4
- DAGA4
- DMDA
- DMDA1
- gamma sarcoglycan
- gamma-sarcoglycan
- gamma-SG
- LGMD2C
- MAM
- MGC130048
- sarcoglycan, gamma (35kDa dystrophin-associated glycoprotein)
- SCARMD2
- SCG3
- SG-gamma

- SGCG_HUMAN
- TYPE

Additional Information & Resources

Educational Resources

- University of Washington Neuromuscular Disease Center
<http://neuromuscular.wustl.edu/musdist/lg.html#2c>

GeneReviews

- Limb-Girdle Muscular Dystrophy Overview
<https://www.ncbi.nlm.nih.gov/books/NBK1408>

Scientific Articles on PubMed

- PubMed
<https://www.ncbi.nlm.nih.gov/pubmed?term=%28SGCG%5BTIAB%5D%29+OR+%28%28gamma-sarcoglycan%5BTIAB%5D%29+OR+%28DMDA%5BTIAB%5D%29+OR+%28SCG3%5BTIAB%5D%29+OR+%28LGMD2C%5BTIAB%5D%29+OR+%2835DAG%5BTIAB%5D%29+OR+%28gamma-SG%5BTIAB%5D%29+OR+%28gamma+sarcoglycan%5BTIAB%5D%29+OR+%2835+kDa+dystrophin-associated+glycoprotein%5BTIAB%5D%29%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+720+days%22%5Bdp%5D>

OMIM

- SARCOGLYCAN, GAMMA
<http://omim.org/entry/608896>

Research Resources

- ClinVar
<https://www.ncbi.nlm.nih.gov/clinvar?term=SGCG%5Bgene%5D>
- HGNC Gene Symbol Report
http://www.genenames.org/cgi-bin/gene_symbol_report?q=data/hgnc_data.php&hgnc_id=10809
- NCBI Gene
<https://www.ncbi.nlm.nih.gov/gene/6445>
- UniProt
<http://www.uniprot.org/uniprot/Q13326>

Sources for This Summary

- Broglio L, Tentorio M, Cotelli MS, Mancuso M, Vielmi V, Gregorelli V, Padovani A, Filosto M. Limb-girdle muscular dystrophy-associated protein diseases. *Neurologist*. 2010 Nov;16(6):340-52. doi: 10.1097/NRL.0b013e3181d35b39. Review.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/21150381>
- Bönnemann CG, Wong J, Jones KJ, Lidov HG, Feener CA, Shapiro F, Darras BT, Kunkel LM, North KN. Primary gamma-sarcoglycanopathy (LGMD 2C): broadening of the mutational spectrum guided by the immunohistochemical profile. *Neuromuscul Disord*. 2002 Mar;12(3):273-80.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/11801399>
- Georgieva B, Todorova A, Tournev I, Mitev V, Kremensky I. C283Y gamma-sarcoglycan gene mutation in the Bulgarian Roma (Gypsy) population: prevalence study and carrier screening in a high-risk community. *Clin Genet*. 2004 Nov;66(5):467-72.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/15479193>
- Guglieri M, Straub V, Bushby K, Lochmüller H. Limb-girdle muscular dystrophies. *Curr Opin Neurol*. 2008 Oct;21(5):576-84. doi: 10.1097/WCO.0b013e32830efdc2. Review.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/18769252>
- Hack AA, Groh ME, McNally EM. Sarcoglycans in muscular dystrophy. *Microsc Res Tech*. 2000 Feb 1-15;48(3-4):167-80. Review.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/10679964>
- Meena AK, Sreenivas D, Sundaram C, Rajasekhar R, Sita JS, Borgohain R, Suvarna A, Kaul S. Sarcoglycanopathies: a clinico-pathological study. *Neurol India*. 2007 Apr-Jun;55(2):117-21.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/17558114>
- Ozawa E, Mizuno Y, Hagiwara Y, Sasaoka T, Yoshida M. Molecular and cell biology of the sarcoglycan complex. *Muscle Nerve*. 2005 Nov;32(5):563-76. Review.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/15937871>
- OMIM: SARCOGLYCAN, GAMMA
<http://omim.org/entry/608896>
- Sandonà D, Betto R. Sarcoglycanopathies: molecular pathogenesis and therapeutic prospects. *Expert Rev Mol Med*. 2009 Sep 28;11:e28. doi: 10.1017/S1462399409001203. Review.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/19781108>
Free article on PubMed Central: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3279956/>
- Straub V, Bushby K. The childhood limb-girdle muscular dystrophies. *Semin Pediatr Neurol*. 2006 Jun;13(2):104-14. Review.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/17027860>
- Trabelsi M, Kavian N, Daoud F, Commere V, Deburgrave N, Beugnet C, Llense S, Barbot JC, Vasson A, Kaplan JC, Leturcq F, Chelly J. Revised spectrum of mutations in sarcoglycanopathies. *Eur J Hum Genet*. 2008 Jul;16(7):793-803. doi: 10.1038/ejhg.2008.9. Epub 2008 Feb 20.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/18285821>

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